

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) A method for manufacturing a semiconductor device comprising:

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; ~~and forming a gate electrode on the second insulating film, wherein forming a second insulating film comprises~~ in a plurality of repeated and continuous cycles, each cycle comprising:

supplying film-forming materials and adsorbing the film-forming materials on the first insulating film;

purging the film-forming materials that have not been adsorbed;

supplying oxidants to oxidize the adsorbed film-forming materials; and

purging the oxidants that have not contributed to oxidization; ~~forming the second insulating film repeatedly, for a plurality of cycles, continuously, and wherein, in~~ purging the oxidants, purging for a first purging time times in an initial number of the plurality of cycles that is, the first purging times being longer than the second purging time times of purging the oxidants in the cycles after the initial number of cycles; and

forming a gate electrode on the second insulating film.

2. (Currently Amended) The method for manufacturing a semiconductor device according to claim 1, wherein the first purging time of times for purging the oxidants in the initial number of cycles is 5 to 15 times longer than the purging ~~time~~ times of the oxidants in the cycles after the initial number of cycles.

3. (Previously Presented) The method for manufacturing a semiconductor device according to claim 1, wherein the second insulating film is selected from the group consisting of HfO_2 , HfAlO_x , HfSiO_x , and nitrides thereof .

4. (Previously Presented) The method for manufacturing a semiconductor device according to claim 1, wherein the initial number of cycles is 10 to 20 cycles.

5. (Currently Amended) A method for manufacturing a semiconductor device comprising:

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; ~~and forming a gate electrode on the second insulating film, wherein forming a second insulating film comprises in a plurality of repeated and continuous cycles, each cycle comprising:~~

supplying film-forming materials and adsorbing the film-forming materials on the first insulating film;

purging the film-forming materials that have not been adsorbed;

supplying oxidants to oxidize the adsorbed film-forming materials; and

purging the oxidants that have not contributed to oxidization; ~~forming the second insulating film repeatedly, for a plurality of cycles, continuously; and wherein, in purging the film-forming materials, purging for a first purging-time times in an initial number of the plurality of cycles that is, the first purging times being longer than the second purging-time times of purging the film-forming materials in the cycles after the initial number of cycles; and~~

forming a gate electrode on the second insulating film.

6. (Currently Amended) The method for manufacturing a semiconductor device according to claim 5, wherein the first purging-time of times for purging the film-forming materials in the initial number of cycles is 5 to 10 times longer than the second purging time times of the film-forming materials in the cycles after the initial number of cycles.

7. (Previously Presented) The method for manufacturing a semiconductor device according to claim 5, wherein the second insulating film is selected from the group consisting of HfO_2 , HfAlO_x , HfSiO_x , and nitrides thereof.

8. (Previously Presented) The method for manufacturing a semiconductor device according to claim 5, wherein the initial number of cycles is 5 to 20 cycles.

9. (Currently Amended) A method for manufacturing a semiconductor device comprising:

forming a first insulating film on a substrate;

forming a second insulating film on the first insulating film; ~~and forming a gate electrode on the second insulating film, wherein forming a second insulating film comprises in a plurality of repeated and continuous cycles, each cycle comprising:~~

supplying film-forming materials and adsorbing the film-forming materials on the first insulating film;

purging the film-forming materials that have not been adsorbed;

supplying oxidants to oxidize the adsorbed film-forming materials; and

purging the oxidants that have not contributed to oxidization; ~~forming the second insulating film repeatedly, for a plurality of cycles, continuously; and wherein,~~

in purging the film-forming materials, purging for a first purging time times in an initial number of the plurality of cycles that is, the first purging times being longer than the second purging time times of purging the film-forming materials in the cycles after the initial number of cycles for film-forming materials, and

in purging the film-forming materials oxidants, purging for a third purging time times in an initial number of the plurality of cycles that is, the third purging times being longer than the fourth purging time times of purging the film-forming materials oxidants in the cycles after the initial number of cycles; and

forming a gate electrode on the second insulating film.

10. (Currently Amended) The method for manufacturing a semiconductor device according to claim 9, wherein

the third purging time times of the oxidants in the initial number of cycles is 5 to 15 times longer than the fourth purging time times of the oxidants in the cycles after the initial number of cycles; and

the ~~first purging-time times~~ of the film-forming materials in the initial number of cycles is 5 to 10 times longer than the ~~second purging-time times~~ of the film-forming materials in the cycles after the initial number of cycles.

11. (Previously Presented) The method for manufacturing a semiconductor device according to claim 9, wherein the second insulating film is selected from the group consisting of HfO_2 , HfAlO_x , HfSiO_x , and nitrides thereof .

12. (Previously Presented) The method for manufacturing a semiconductor device according to claim 9, wherein the initial number of cycles is 10 to 20 cycles.

13. (Currently Amended) ~~A The method for manufacturing a semiconductor device according to claim 1, comprising: forming a first insulating film on a substrate; forming a second insulating film on the first insulating film; and forming a gate electrode on the second insulating film, wherein forming a second insulating film comprises supplying film-forming materials and adsorbing the film-forming materials on the first insulating film; purging the film-forming materials that have not been adsorbed; supplying oxidants to oxidize the adsorbed film-forming materials; and purging the oxidants that have not contributed to oxidization; forming the second insulating film repeatedly, for a plurality of cycles, continuously; and supplying a larger quantity of the oxidants in an the initial number of the plurality of cycles than in the cycles after the initial number of cycles.~~

14. (Previously Presented) The method for manufacturing a semiconductor device according to claim 13, wherein the quantity of the oxidants supplied in the initial number of cycles is 2 to 3 times larger than the quantity of the oxidants supplied in the cycles after the initial number of cycles.

15. (Previously Presented) The method for manufacturing a semiconductor device according to claim 13, wherein the second insulating film is selected from the group consisting of HfO_2 , HfAlO_x , HfSiO_x , and nitrides thereof.

16. (Previously Presented) The method for manufacturing a semiconductor device according to claim 13, wherein the initial number of cycles is 5 to 20 cycles.

17. (Currently Amended) ~~A~~ The method for manufacturing a semiconductor device according to claim 1, comprising: ~~forming a first insulating film on a substrate; forming a second insulating film on the first insulating film; and forming a gate electrode on the second insulating film, wherein forming a second insulating film comprises supplying film-forming materials and adsorbing the film-forming materials on the first insulating film; purging the film-forming materials that have not been adsorbed; supplying oxidants to oxidize the adsorbed film-forming materials; and purging the oxidants that have not contributed to oxidization; forming the second insulating film repeated for a plurality of cycles continuously; supplying the oxidants in a plurality of separate cycles, in an initial number of the plurality of cycles a number of the separated times larger in number than the number of separated times of supplying the oxidants in the cycles following the initial number of cycles.~~

18. (Currently Amended) The method for manufacturing a semiconductor device according to claim 17, wherein the number of the ~~separated times~~ separate cycles of supplying the oxidants in the initial number of cycles is 2 to 3 times larger than the number of the ~~separated times~~ cycles of supplying the oxidants in the cycles following the initial number of cycles.

19. (Previously Presented) The method for manufacturing a semiconductor device according to claim 17, wherein the second insulating film is selected from the group consisting of HfO_2 , HfAlO_x , HfSiO_x , and nitrides thereof.

20. (Previously Presented) The method for manufacturing a semiconductor device according to claim 17, wherein the initial number of cycles is 5 to 20 cycles.